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(54) **Plug valve**

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EP 0 529 186 B1

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Description

Background

The present invention relates to a plug valve, a seal retainer assembly for removable mounting in a seal receiving cavity in a plug and a plug for removable mounting in a plug valve according to the preambles of claims 1, 16 and 20, respectively.

Plug valves are comprised of a valve body having an inlet and an outlet in axial alignment with each other and a plug opening intersecting the inlet and outlet. The plug opening is adapted to receive a plug which has an orifice therein adapted to be placed into axial alignment with the inlet and outlet to connect the two and thereby form a passageway for fluid to pass from the inlet through the orifice and to the outlet. The plug is adapted to be rotated to an inoperative position wherein the orifice is out of axial alignment with the inlet and outlet to disconnect the two and thereby stop the flow of fluid from the inlet to the outlet. In such plug valves a sealing ring (preferably an O-ring) is removably mounted in a sealing ring-receiving cavity on the plug wall to form a seal when the plug is rotated to its inoperative position. To replace the sealing ring the plug is removed from the housing and a new sealing ring is placed in the ring-receiving groove in the plug wall.

It has been found that in some existing plug valves, the sealing ring may not be easily replaced. In other valves, it is not possible to determine the direction of the flow from the position of the handle. Moreover, some existing plug valves do not have instant control of the flow while others are not multifunctional and do not have throttling capabilities. Furthermore, such existing plug valves may be inadvertently actuated which may be a safety hazard and others do not provide backup sealing rings. Moreover, it is difficult (if not impossible) for existing plug valves to be capable of being both panel and base mounted. In still others, the plug may be removed if the handle is missing. Some plug valves do not have straight through orifices so that maintenance, and especially roddability, is difficult. In other plug valves, it may be difficult to use standard O-rings.

A plug valve, a seal retainer assembly and a valve plug of the above-referenced kinds are known from DE-U-1 783 514. Such plug valve comprises a ball-shaped valve plug which has two opposite flat sections wherein on one of such sections a seal retainer assembly is bolted. An O-ring arranged between the retainer assembly and the plug is compressed between both parts thus forming a seal. To remove the O-ring it is necessary to unscrew several bolts which is time consuming.

A further plug valve is known from US-A-2 433 732. With this known plug valve a bore is cut into the wall of the plug, which bore is in communication with the main orifice.

The bore is provided with an annular shoulder against which is supported a flanged member, a shank

portion of which extends through to the base of the bore. A sealing ring is supported in the bore by the flanged member, being held in place therein by an insert. The sealing ring is positioned radially outwardly of a flange portion of the insert. The insert has an external face of substantially arcuate form to cooperate with the periphery of the plug and a base portion which extends through the base of an internal bore in the flanged member.

Objects

The present invention overcomes these drawbacks and has for one of its objects the provision of an improved plug valve in which the sealing ring may be easily removed and replaced and which prevents any fluid flowing through the valve from leakage.

Another object of the present invention is the provision of a seal retainer assembly which is easily removably attached to a cavity in the plug wall.

Another object of the present invention is the provision of an improved valve plug which is adapted to prevent leakage flow.

Such objects are solved by a plug valve, a seal retainer assembly and a plug as defined in claims 1, 16 and 20, respectively.

The present invention provides an improved plug valve in which the plug orifice is a straight through orifice to permit full flow of the fluid and to improve maintenance and roddability.

The present invention further provides an improved plug valve in which the position of the handle will indicate the direction of the flow and in which the direction of flow may be indicated even if the handle is missing.

The present invention further provides an improved plug valve in which plug removal is prevented even if the handle is missing.

The present invention further provides an improved plug valve in which the valve is a 90° on-off position to permit instant control of the flow.

The present invention further provides an improved plug valve which is multi-functional and has throttling capabilities.

The present invention further provides an improved plug valve wherein backup sealing rings may be used.

The present invention further provides an improved plug valve wherein standard O-rings may be used which may be made of any preferred material, such as polypropylene.

Brief Description of the Drawings

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings forming a part of the specification, wherein:

Fig. 1 is an expanded perspective view of a plug valve made in accordance with the present invention.

Fig. 2 is a side elevational view of the assembled

plug valve of the present invention.

Fig. 3 is a sectional view taken along line 3-3 of Fig. 2.

Fig. 3A is a partial sectional view taken along line 3A-3A of Fig. 2.

Fig. 4 is a perspective view showing the preferred retainer of the present invention.

Fig. 5 is an elevational view thereof.

Fig. 6 is a bottom view thereof.

Fig. 7 is a sectional view taken along line 7-7 of Fig. 5.

Fig. 8 is a perspective view showing panel mounting of the plug valve.

Fig. 8A is an elevational view of the panel mounting shown in Fig. 8.

Fig. 9 is a perspective view showing base mounting of the plug valve.

Fig. 9A is an elevational view of the base mounting shown in Fig. 9.

Fig. 10 is a perspective view showing another embodiment of the invention in the form of a modified plug for the valve.

Fig. 10A is a partial sectional view of the plug valve shown in Fig. 10 in its operative position.

Fig. 11 is a perspective view showing a modified retainer which may be used with the plug valve of Fig. 1.

Fig. 12 is a sectional view taken along line 12-12 of Fig. 11.

Fig. 13 is a perspective view showing another modified retainer which may be used with the plug valve of Fig. 1.

Fig. 14 is a side elevational view thereof.

Fig. 15 is a sectional view taken along line 15-15 of Fig. 13.

Fig. 16 is a partial cross-sectional view of a plug valve showing the retainer of Figs. 11-12 in operation.

Fig. 17 is a partial cross-sectional view of a plug valve showing the retainer of Figs. 13-15 in operation.

Description

Referring to the drawing and more particularly to Fig. 1, the plug valve 1 comprises a metal body assembly 2 having an inlet 3 and outlet 4 in axial alignment with each other and having a cylindrical plug receiving opening 5 at right angles to and intersecting the inlet 3 and the outlet. A cylindrical plug assembly 10 is adapted to be placed within the opening 5 of the body 2 and has a horizontal orifice 11 extending therethrough. The orifice 11 is on the same axial plane as the axial plane of the inlet 3 and the outlet 4. As is usual in such plug valves, when the plug 10 is rotated to its operative position, the orifice 11 is in axial alignment with the inlet and outlet 3-4 so as to allow fluid to move from the inlet 3 to the outlet 4. By rotating the plug 10, the orifice 11 is moved out of axial alignment with the inlet and the outlet 3-4 to prevent any fluid from moving therethrough. The body 2 may have the usual couplings 13-14 con-

necting the inlet and the outlet 3-4 to different parts of the system in which the plug valve 1 is to be used. The upper and lower ends of the opening 5 in the body 2 are provided with lower and upper expanded portions 15 and 16.

The plug 10 is preferably a one-piece metal plug and has an upper actuating portion 21 and a lower operative portion 20 with orifice 10 located in the lower operative portion 20. The plug 10 has substantially flat bottom and top faces 22-23 respectively. Adjacent the bottom face 22 of the plug 10 there is provided a retaining circular groove 24 adapted to receive retaining ring 26. Interposed between upper plug portion 21 and lower plug portion 20 is a retaining circular groove 25 adapted to receive retaining ring 27. The retaining rings 26-27 are adapted to sit in the expanded portions 15-16, respectively. When the two retaining rings 26-27 are in place in the grooves 24-25 the plug 10 remains securely in place within the body 2 and cannot move axially, even if the handle 60 is removed.

The plug 10 is also provided with a pair of spaced upper and lower sealing grooves 30-31. The sealing grooves 30-31 are adapted to receive sealing O-rings 32-33, respectively, as well as backup sealing rings 34-35, respectively, which may be TFE. The rings 32-35 will form a seal with the inner walls 6 of the opening 5 in the body 2 to prevent leakage.

The upper and lower faces 40-41 of the body 2 have diametrically opposed screw openings 42-43, respectively, to receive screws 44-45, respectively, for panel or base mounting of the valve as will be further discussed hereinbelow. In addition, a stop screw opening 46 is provided in the top face 40 of the base to receive a stop screw 47 which is adapted to stop the movement of the handle 60 as will be more fully described hereinafter.

The handle 60 of the plug valve 1 is preferably oval shaped with the pointed end 61 in line with the orifice 11 in plug 10 so as to point to the direction of flow. The handle 60 is mounted on the upper portion 21 of the plug 10 which sits in a cavity 62 therein. The handle 60 has a stop surface 63 adapted to strike the stop screw 47 in order to limit the rotation of the plug 10 to 90° turns. A horizontal screw opening 64 is provided in handle 60 adapted to receive a screw 65. The upper portion 21 of plug 10 has a pair of horizontal screw openings 66-67 through which the screw 65 may extend to hold the handle in place. The two screw openings 66-67 permit the handle 60 to be positioned high or low on the plug 10.

A separate metal retainer assembly 50 is provided for removable attachment to a cavity 70 in the outer wall of the plug 10. The retainer 50 has a generally oval cap portion 51 with a curved outer surface 52 and a generally cylindrical body portion 54 extending therefrom. The body portion 54 is diametrically smaller than the cap 51 to form a circumferential ledge 53 at the juncture of the cap 51 and body portion 54. A sealing ring 55, preferably in the form of an O-ring, is adapted to sit in the ledge 53 of the retainer 50. The retainer 50 may be either solid

or may have a cavity 57 in its base 57A which is preferably flat.

The side wall of the plug 10 has a cylindrical cavity 70 adapted to receive the retainer 50 which is radially movable within the cavity. The cavity 70 has a flat base 71 and a generally cylindrical groove 72 which surrounds the base 71 and follows the curve of the wall 56 of plug 10. The O-ring 51 is placed beneath the ledge 53 in retainer 50 and the retainer 50 is placed in cavity 70 in plug 10. The curved outer surface 52 of retainer 50 also follows the curve of the plug wall 56. The body portion 54 is pressed or snapped into cavity 70 and the O-ring 55 is compressed between the ledge 53 and the groove 72 in the cavity 70. With the retainer 50 in the cavity 70, when the plug 10 is turned to the off position (Figs. 3 and 3A), the retainer 50 is in the path of the fluid flow from inlet 3 and O-ring 55 is compressed to form a seal to prevent any fluid from leakage.

With this structure when the O-ring 55 is to be replaced, it is merely necessary to lift the plug 10 out of the body opening 5 and to remove the retainer 50 with the used O-ring 55 from the cavity 70 and replace it with a new retainer 50 having a fresh O-ring 55. It will be seen that this operation can be accomplished quickly and easily.

In the embodiment of the plug 10 shown in Figs. 10 and 10A an auxiliary cylindrical orifice 90 is formed in the plug 10 which intersects the main orifice 11. The auxiliary orifice 90 has a groove 91 on wall 56 surrounding the orifice 90. The retainer 50 is snapped into the auxiliary orifice 90 so that the body 54 lies in auxiliary orifice 90 to compress the O-ring 55 between groove 91 and ledge 53 in retainer 50. When the plug 10 is rotated to the off position, the auxiliary cavity 90 and its retainer 50 is placed facing the outlet 4. The flow of fluid from the inlet 3 will strike the base 57A to push the retainer 50 against inner wall 16 in body 2 and compress the O-ring 55 to form a seal. In this embodiment, the top wall 95 of the upper portion 21 of plug 10 has a groove 96 therein aligned with orifice 11 so as to indicate direction of flow if the handle 60 is missing.

In the embodiment shown in Figs. 11, 12 and 16, the retainer 50 has a cylindrical opening 58 through the center at the body 54. It is adapted to be used with the plug 5 shown in Figs. 1-3. It is placed in the cavity 70 in the plug wall 56 and the O-ring 55 compressed is between ledge 53 and groove 72. When the plug 10 is turned to the off position (Fig. 16) fluid will enter the opening 58 and seep around the curved wall 52 to compress the O-ring 55 and form a seal.

In the embodiment shown in Figs. 13-15 and 17 which is also adapted to be used with a plug similar to the plug shown in Figs. 1-3, the retainer 50 not only has a central, opening 58 in its body 54 in a manner similar to Figs. 11-12 and 16, but also has side channels 59 at right angles to the opening 58 on the edge 57A of the body 54. This permits fluid to move through the central opening 58 and side channels 59 to apply pressure to

the O-ring and form a seal.

The plug valve 1 of the present invention may be panel mounted as shown in Figs. 8 and 8A. To accomplish this, the handle 60 is removed and the plug is inserted from the bottom through a support surface 80. The screws 44 are inserted into the top 40 of body 2 from the top and through the surface 80 and into the screw openings 42 in order to hold the plug valve in place. The handle 60 is then replaced. It will be noted that the plug valve 1 is hidden from view in this embodiment.

Alternately, the plug valve 1 may be base mounted as shown in Figs. 9 and 9A. In this embodiment, the plug valve 1 is placed on top of the support surface 80. The screws 45 extend through the surface 80 from the bottom and into the screw openings 43 in the lower face 41 of the body 2.

It will thus be seen that the present invention provides an improved plug valve in which the sealing ring may be easily removed and replaced from the plug valve and in which the sealing ring retainer may be attached either to the wall of the plug or a secondary orifice intersecting the main orifice in the plug. The present invention also provides a removable retainer which is removably attached to a cavity in the plug wall.

The plug valve also provides for the handle to indicate the direction of the flow and in which a 90° on-off position permits instant control of the flow. The plug is multi-functional, has throttling capabilities and permits the use of backup retainer rings. The orifice is a straight through orifice to give full flow and to increase rodability.

In addition, the present invention provides an improved plug valve in which standard O-rings may be used which can be made of any preferred material such as polypropylene.

Claims

1. A plug valve (1) comprising a body (2) having an inlet (3) and an outlet (4), said body (2) having a plug-receiving opening (5) therein intersecting said inlet (3) and outlet (4), a plug (10) mounted in said opening (5), said plug (10) having an outer wall and an orifice (11) extending therethrough, said plug (10) movable from an operative position in which the orifice (11) is connected to the inlet (3) and the outlet (4) to allow fluid to pass from the inlet (3) to the outlet (4) to an inoperative position in which the orifice (11) is disconnected from the inlet (3) and the outlet (4) to prevent fluid from passing from the inlet (3) to the outlet (4), seal-receiving means (70-72) in the plug outer wall spaced from said orifice (11), said seal-receiving means (70-72) comprising a cavity (70) therein in non-communicating relationship to said orifice (11) and a seal-receiving groove (72) having a wall surface to accommodate the seal

- (55), a seal retainer assembly (50) removably mounted on said seal-receiving means (70-72), a seal (55) interposed between said seal-receiving means (70-72) and at least a portion of said seal retainer assembly (50) to form a seal, said seal retainer assembly (50) having a top portion (51) and body portion (54), the body portion (54) of the seal retainer assembly (50) being narrower than the top portion (51), wherein the seal (55) is received in a ledge (53) formed at the juncture between the body portion (54) and the top portion (51) which is removably mounted in said cavity (70) and being interposed at least partially between said ledge (53) and the wall surface of the seal-receiving groove (72) and in contact with both, and said seal retainer assembly (50) being on substantially the same level as said inlet (3) and outlet (4) whereby when the plug (10) is moved to its inoperative position the top portion (51) of the seal retainer assembly (50) will be in axial alignment with said inlet (3) and outlet (4), characterized in that said body portion (54) of said seal retainer assembly (50) is received within said cavity (70) to be radially movable, whereby when the plug (10) is moved to its inoperative position fluid from said inlet (3) will strike the seal retainer assembly (50) radially moving it within said cavity (70) to cause it to compress the seal (55) between the ledge (53) and the wall surface to effectively seal the entire cavity (70) to prevent any leakage therethrough.
2. A plug valve (1) as set forth in claim 1, characterized in that said seal retainer assembly (50) is a one piece structure comprising said top portion (51) and body portion (54).
 3. A plug valve (1) as set forth in claim 2, characterized in that the top surface (52) of the retainer (50) is curved and in that the plug (10) is cylindrical with the curve of the said top surface (52) following the curve of the plug (10).
 4. A plug valve (1) as set forth in claim 3, characterized in that said seal (55) is an O-ring.
 5. A plug valve (1) as set forth in claim 4, characterized in that the retainer (50) has a central opening (58) extending therethrough.
 6. A plug valve (1) as set forth in claim 5, characterized in that the retainer (50) has side channels (59) in its bottom extending from and communicating with said central opening (58).
 7. A plug valve (1) as set forth in claim 4, characterized in that said seal-receiving means (70-72) in the plug (10) is spaced approximately 90° from the orifice (11).
 8. A plug valve (1) as set forth in claim 7, characterized in that the retainer (50) is placed in front of the inlet (3) when the plug (10) is moved to the inoperative position.
 9. A plug valve (1) as set forth in claim 8, characterized in that seal means (30-35) comprising a pair of seals (32, 33) are mounted around the periphery of the plug (10).
 10. A plug valve (1) as set forth in claim 8, characterized in that said valve body (2) has top and bottom faces (40, 41) through which a plug-receiving opening (5) extends and in that means (24-27) are provided for holding the plug (10) in the plug-receiving opening (5) in the valve body (2), said holding means (24-27) comprising retainer means (26, 27) mounted in groove means (24, 25) in the plug (10) and positioned in shoulder means (15, 16) in the top and bottom faces (40, 41) of the valve body (2).
 11. A plug valve (1) as set forth in claim 8, characterized in that a handle (60) is mounted on the plug (10) with means (61) thereon pointing to the direction of flow and in that stop means (46) are provided on the body portion (2) to prevent rotation of the plug (10) more than 90°.
 12. A plug valve (1) as set forth in claim 8, characterized in that said valve body (2) has top and bottom faces (40, 41) through which a plug-receiving opening (5) extends and in that means (42-45) are provided to both base mount and panel mount the plug valve (1), said mounting means (42-45) comprising means to permit the valve (1) to be attached to a support surface (80) from the bottom or from the top, said means (42-45) also comprising screw openings (42, 43) in the top and bottom faces (40, 41) of the valve body (2) in order to receive screws (44, 45) for attaching the plug valve (1) either from the bottom or the top.
 13. A plug valve (1) as set forth in claim 7, characterized in that said plug (10) has an auxiliary orifice (90) communicating with and at an angle to the orifice (11), said retainer (50) being mounted in said auxiliary orifice (90), said auxiliary orifice (90) having a seal-receiving groove (91) therearound to receive a seal (55) whereby the seal (55) is interposed between the said groove (91) and the ledge (53) of the retainer (50).
 14. A plug valve (1) as set forth in claim 13 characterized in that the retainer (50) is placed in front of the outlet (4) when the plug (10) is moved to the inoperative position.
 15. A plug valve (1) as set forth in claim 7, characterized

in that the top wall (95) of the plug (10) has a flow-direction indicating groove (96) therein.

16. A seal retainer assembly for removable mounting in a seal receiving cavity (70) in a plug (10) of a plug valve (1), said seal retainer assembly (50) comprising a top portion (51) and a body portion (54), the body portion (54) of said seal retainer assembly (50) being narrower than the top portion (51), the top and body portions (51, 54) being integrally formed, and a seal (55) being received in a ledge (53) formed at a juncture between the body portion (54) and the top portion (51) of said seal retainer assembly (50), characterized in that the top portion (51) of said seal retainer assembly (50) has a completely curved outer surface and is adapted to be held in said receiving cavity without any additional attachment elements by configuring the outer surface of the body portion as part of a pressure or snap connection.

17. A seal retainer assembly as set forth in claim 16, characterized in that the ledge (53) is adapted to receive an O-ring seal (55).

18. A seal retainer assembly as set forth in claim 17, characterized in that the retainer (50) has a central opening (58) extending therethrough.

19. A seal retainer assembly as set forth in claim 18, characterized in that the retainer (50) has side channels (59) in its bottom extending from and communicating with said central opening (58).

20. A plug (10) for removable mounting in a plug valve (1) said plug (10) having an outer wall and an orifice (11) extending therethrough, seal-receiving means (70-72) in the plug outer wall spaced from said orifice (11), a seal retainer assembly (50) removably mounted in said seal-receiving means (70-72), a seal (55) interposed between said seal-receiving means (70-72) and at least a portion of said seal retainer assembly (50) to form a seal, the seal-receiving means (70-72) comprising a cavity (70) therein and a seal-receiving groove (72) having a wall surface to accommodate the seal (55), said seal retainer assembly (50) having a top portion (51) and body portion (54), the body portion (54) of the seal retainer assembly (50) being narrower than the top portion (51) to be removably mounted in said cavity (70), the seal (55) being received in a ledge (53) formed at the juncture between the body portion (54) and the top portion (51) and being interposed at least partially between the ledge (53) and the wall surface of the seal-receiving groove (72) and in contact with both, characterized in that said body portion (54) of said seal retainer assembly (50) is received within said cavity (70) to be radially movable, whereby when the plug (10) is moved to its

inoperative position fluid from said inlet (3) will strike the seal retainer assembly (50) radially moving it within said cavity (70) to cause it to compress the seal (55) between the ledge (53) and the wall surface to effectively seal the entire cavity (70) to prevent any leakage therethrough.

21. A plug (10) as set forth in claim 20, characterized in that said seal retainer assembly (50) is a one piece structure comprising a top portion (51) and body portion (54).

22. A plug (10) as set forth in claim 21, characterized in that the plug outer wall is cylindrical.

23. A plug (10) as set forth in claim 22, characterized in that said seal-receiving means (70-72) in the plug (10) is spaced approximately 90° from the orifice (11).

24. A plug (10) as set forth in claim 23, characterized in that seal mean grooves (30, 31) are provided around the periphery of the plug (10).

25. A plug (10) as set forth in claim 24, characterized in that retainer grooves (24, 25) are provided in the plug (10)

26. A plug (10) as set forth in claim 23, characterized in that said plug (10) has an auxiliary orifice (90) communicating with and at an angle to the orifice (11), said auxiliary orifice (90) having a seal-receiving groove (91) therearound to receive a seal (55).

27. A plug (10) as set forth in claim 23, characterized in that the top wall (95) of the plug (10) has a flow-direction indicating groove (96) therein.

Patentansprüche

1. Stopfenventil (1) mit einem Körper (2) mit einem Einlaß (3) und einem Auslaß (4), wobei der Körper (2) ein Loch (5) zum Aufnehmen eines Stopfens hat, das den Einlaß (3) und den Auslaß (4) schneidet, einem Stopfen (10), der in dem Loch (5) montiert ist, wobei der Stopfen (10) eine äußere Wand und eine sich durch ihn erstreckende Öffnung (11) hat, und wobei der Stopfen (10) von einer Betriebsstellung, in der die Öffnung (11) mit dem Einlaß (3) und dem Auslaß (4) verbunden ist, um einen Durchgang von Fluid von dem Einlaß (3) zu dem Auslaß (4) zu ermöglichen, in eine Ruhestellung bewegbar ist, in der die Öffnung (11) von dem Einlaß (3) und dem Auslaß (4) getrennt ist, um den Durchgang von Fluid von dem Einlaß (3) zu dem Auslaß (4) zu verhindern, Mitteln (70-72) zum Aufnehmen einer Dichtung in der äußeren Wand des Stopfens, die

- von der Öffnung (11) beabstandet sind, wobei die Mittel (70-72) zum Aufnehmen einer Dichtung einen Hohlraum (70), der nicht mit der Öffnung (11) in Verbindung steht, und eine Nut (72) zum Aufnehmen einer Dichtung haben, die eine Wandoberfläche zum Unterbringen der Dichtung (55) aufweist, einem Dichtungshalteraufbau (50), der entferntbar an den Mitteln (70-72) zum Aufnehmen einer Dichtung montiert ist, und einer Dichtung (55), die zwischen den Mitteln (70-72) zum Aufnehmen einer Dichtung und wenigstens einem Abschnitt des Dichtungshalteraufbaus (50) angeordnet ist, um eine Dichtung zu bilden, wobei der Dichtungshalteraufbau (50) einen oberen Abschnitt (51) und einen Körperabschnitt (54) hat, wobei der Körperabschnitt (54) des Dichtungshalteraufbaus (50) schmaler ist als der obere Abschnitt (51), wobei die Dichtung (55) in einer Kante (53) aufgenommen ist, die an der Verbindungsstelle zwischen dem Körperabschnitt (54) und dem oberen Abschnitt (51) ausgebildet ist, und entferntbar in dem Hohlraum (70) montiert ist und wenigstens teilweise zwischen der Kante (53) und der Wandoberfläche der Nut (72) zum Aufnehmen einer Dichtung angeordnet ist und beide berührt, und wobei der Dichtungshalteraufbau (50) im wesentlichen auf dem gleichen Niveau wie der Einlaß (3) und der Auslaß (4) liegt, wodurch dann, wenn der Stopfen (10) in seine Ruhestellung bewegt ist, der obere Abschnitt (51) des Dichtungshalteraufbaus (50) axial mit dem Einlaß (3) und dem Auslaß (4) ausgerichtet sein wird, dadurch gekennzeichnet, daß der Körperabschnitt (54) des Dichtungshalteraufbaus (50) radial beweglich in dem Hohlraum (70) aufgenommen ist, wodurch dann, wenn der Stopfen (10) in seine Ruhestellung bewegt ist, Fluid von dem Einlaß (3) auf den Dichtungshalteraufbau (50) trifft und diesen radial innerhalb des Hohlraums (70) bewegt, so daß dieser die Dichtung (55) zwischen der Kante (53) und der Wandoberfläche zusammendrückt, um den gesamten Hohlraum (70) wirksam abzudichten und jede Leckage durch ihn hindurch zu vermeiden.
2. Stopfenventil (1) nach Anspruch 1, dadurch gekennzeichnet, daß der Dichtungshalteraufbau (50) eine einstückige Struktur mit dem oberen Abschnitt (51) und dem Körperabschnitt (54) hat.
 3. Stopfenventil (1) nach Anspruch 2, dadurch gekennzeichnet, daß die obere Fläche (52) des Halters (50) gekrümmt ist und daß der Stopfen (10) zylindrisch ist, wobei die Krümmung der oberen Fläche (52) der Krümmung des Stopfens (10) folgt.
 4. Stopfenventil (1) nach Anspruch 3, dadurch gekennzeichnet, daß die Dichtung (55) ein O-Ring ist.
 5. Stopfenventil (1) nach Anspruch 4, dadurch gekennzeichnet, daß der Halter (50) eine zentrale Öffnung (58) hat, die sich durch ihn erstreckt.
 6. Stopfenventil (1) nach Anspruch 5, dadurch gekennzeichnet, daß der Halter (50) in seinem Boden Seitenkanäle (59) hat, die sich von der zentralen Öffnung (58) aus erstrecken und mit dieser in Verbindung stehen.
 7. Stopfenventil (1) nach Anspruch 4, dadurch gekennzeichnet, daß die Mittel (70-72) zum Aufnehmen einer Dichtung in dem Stopfen (10) ungefähr 90° von der Öffnung (11) beabstandet sind.
 8. Stopfenventil (1) nach Anspruch 7, dadurch gekennzeichnet, daß der Halter (50) vor dem Einlaß (3) angeordnet ist, wenn der Stopfen (10) in die Ruhestellung bewegt ist.
 9. Stopfenventil (1) nach Anspruch 8, dadurch gekennzeichnet, daß die ein Paar Dichtungen (32, 33) umfassenden Dichtungsmittel (30-35) um den Umfang des Stopfens (10) montiert sind.
 10. Stopfenventil (1) nach Anspruch 8, dadurch gekennzeichnet, daß der Ventilkörper (2) eine obere und eine untere Stirnseite (40, 41) hat, durch die sich ein Loch (5) zum Aufnehmen eines Stopfens erstreckt und daß Mittel (24-27) zum Halten des Stopfens (10) in dem Loch (5) zum Aufnehmen des Stopfens im Ventilkörper (2) vorgesehen sind, wobei die Mittel (24-27) zum Halten Haltemittel (26, 27) aufweisen, die in Nutmitteln (24, 25) in dem Stopfen (10) montiert sind und die in Schultermitteln (15, 16) in der oberen und der unteren Stirnseite (40, 41) des Ventilkörpers (2) angeordnet sind.
 11. Stopfenventil (1) nach Anspruch 8, dadurch gekennzeichnet, daß ein Handgriff (60) mit darauf angeordneten Mitteln (61), die in die Strömungsrichtung zeigen, an dem Stopfen (10) montiert ist und daß Anschlagmittel (46) an dem Körperteil (2) vorgesehen sind, um ein Drehen des Stopfens (10) um mehr als 90° zu verhindern.
 12. Stopfenventil (1) nach Anspruch 8, dadurch gekennzeichnet, daß der Ventilkörper (2) eine obere und eine untere Stirnseite (40, 41) hat, durch die sich ein Loch (5) zum Aufnehmen eines Stopfens erstreckt und daß Mittel (42-45) sowohl für die Sockelbefestigung als auch die Schalttafelbefestigung des Stopfenventils (1) vorgesehen sind, wobei die Befestigungsmittel (42-45) Mittel aufweisen, mit denen das Ventil (1) vom Boden oder von der Oberseite aus an einer Stützfläche (80) befestigt werden kann, wobei die Mittel (42-45) auch Schrauböffnungen (42, 43) in der oberen und der unteren Stirnseite (40, 41) des Ventilkörpers (2) aufweisen, um

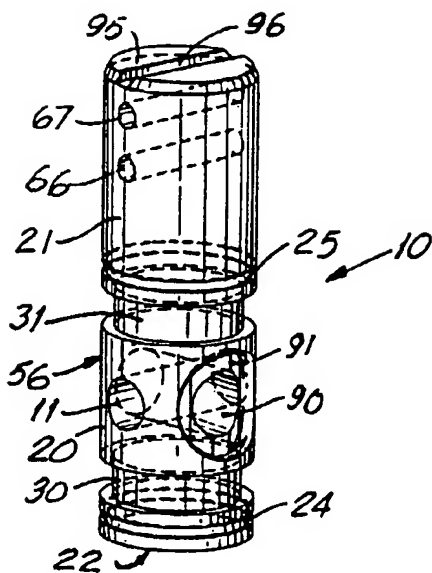


FIG. 10

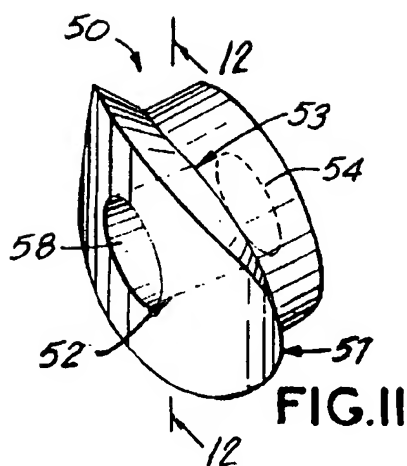


FIG. 11

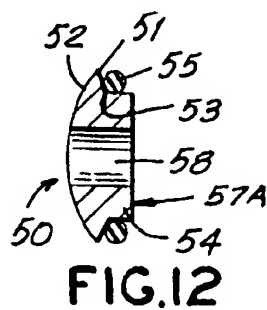


FIG. 12

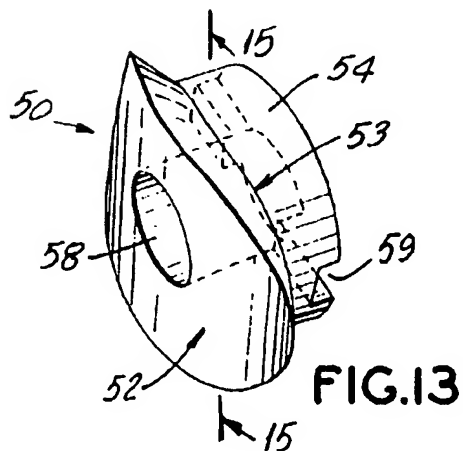


FIG. 13

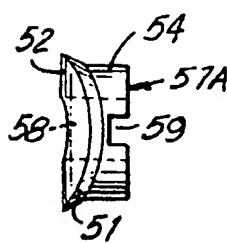


FIG. 14

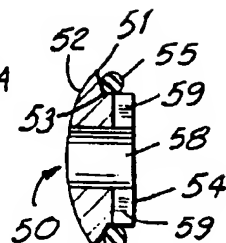


FIG. 15

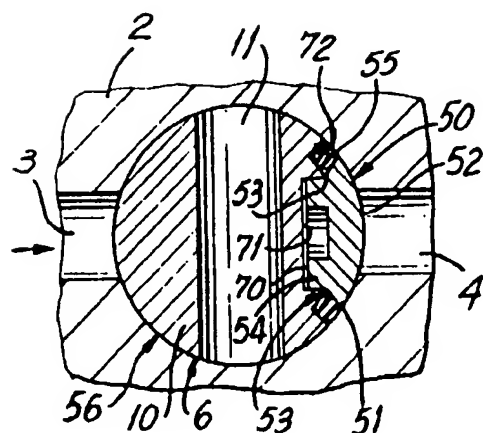


FIG. 10A

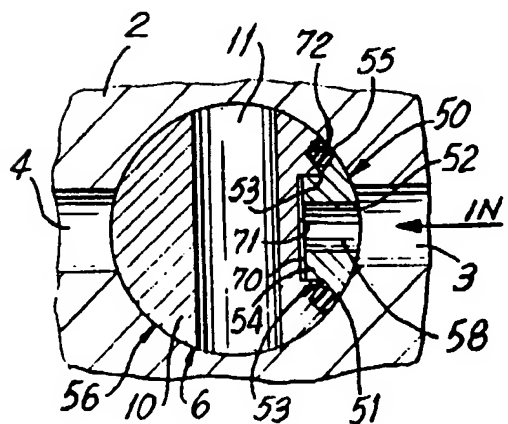


FIG. 16

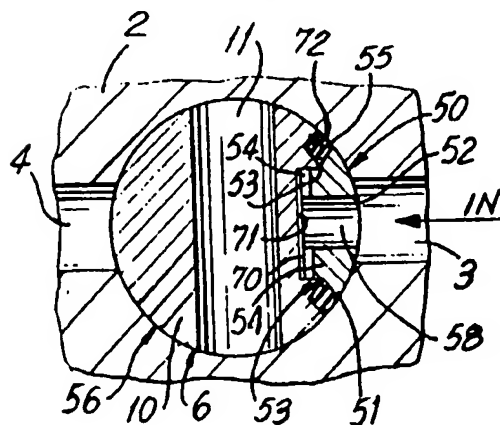


FIG. 17